

wherein said polarizing plate is movable in or from the optical path,
and

said polarizing plate is disposed in a movable portion of a mechanical iris in a manner whereby it is movable in or from the optical path by operation of said movable portion of said mechanical iris.

164. (New claim.) A method of driving a light modulation apparatus including a liquid crystal device, comprising the step of:

modulating a pulse width of each drive pulse to be applied to said liquid crystal device, thereby controlling a transmittance of light made incident on said liquid crystal device,

wherein a polarizing plate is disposed in an optical path of light made incident on said liquid crystal device,

said polarizing plate is movable in or from the optical path, and

said polarizing plate is disposed in a movable portion of a mechanical iris in a manner whereby it is movable in or from the optical path by operation of said movable portion of said mechanical iris.

“[O]ne or more pages separate from the amendment, marked up to show all of the changes relative” to the previous versions of the paragraphs and claims are provided in Appendix A attached herewith.¹

REMARKS

Claims 6 - 19, 73 - 86, 111 - 124 and 149 - 162 are pending and under consideration.

In the Office Action of July 18, 2002, claims 6 - 11, 13 - 17, 19, 73 - 86, 111 - 116, 118 - 122, 124 and 149 - 162 were rejected, and claims 12, 18, 117 and 123 were objected to as being dependent upon a rejected base claim. The Examiner alleged that claims 73 - 86 and 149 - 162 are unpatentable under §112², first paragraph, for containing subject matter not described in the specification. The remaining rejected claims were rejected under §102(e)³ and/or §103(a)⁴.

¹ Pursuant to 37 C.F.R. §1.121.

² 35 U.S.C. §112.

³ 35 U.S.C. §102(e).

⁴ 35 U.S.C. §103(a).

The Examiner has indicated that the claims objected to would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

§102(e) and/or §103(a) Rejections

Applicants have amended independent claim 6, which is the base claim of dependent claim 12, to include the limitations of claim 12 and intervening claims 9 and 11.

Accordingly, claim 6 is allowable. Similarly, applicants have amended claim 111, which is the base claim of dependent claim 117, to include the limitations of claim 117 and intervening claims 114 and 116. Accordingly, claim 111 is also allowable.

Applicants have added new claims 163 and 164. Independent claim 163 is dependent claim 18 rewritten in independent form including all of the limitations of base claim 6 and intervening claims 16 and 17. Therefore it is allowable. Similarly, independent claim 164 is dependent claim 123 rewritten in independent form including all of the limitations of base claim 111 and intervening claims 121 and 122, whereby it is also allowable. Further, these new claims do not add any new matter.

The pending dependent claims that depend on independent claims 6 and 111 are also allowable because their parent independent claims 6 and 111 are patentable as discussed above. Their rejections under §102(e) and/or §103(a) are moot.

§112 Rejections

The Examiner has alleged that “image pickup apparatus” is not disclosed in the claims or the specification, which renders claims 73 - 86 and 149 - 162 unpatentable under §112(1). Applicants respectfully disagree.

The specification repeatedly makes reference to an image pickup apparatus and discusses it adequately for one skilled in the art to understand it in order to practice the present invention. For example, an image pickup apparatus is discussed in the specification in context in the first and second paragraphs on page 14, in the last paragraph on page 16, in the first paragraph on page 17, etc. More particularly, the specification provides that the image pickup apparatus uses a light modulation apparatus which stably controls transmittance,⁵ and which is disposed on an optical path of an optical system of the image

⁵ See page 16, lines 20 - 23 of the specification.

pickup apparatus.⁶ Further, “[t]he image pickup apparatus [which includes] the light modulation apparatus may further include an image pickup device disposed on the light outgoing side of the light modulation apparatus, and may be configured such that the drive circuit unit is provided in the image pickup device ...”.⁷ An image pickup apparatus having such apparatus associated with it in such context is adequate for one skilled in the subject art to understand and practice the present invention. Further, claims 73 - 86 and 149 - 162, all of which concern an image pickup apparatus, provide further context in the form of associated apparatus and performance of the image pickup apparatus for those skilled in the art to understand it and to practice the invention. Although Applicants have chosen to broadly call it an “image pickup apparatus” rather than a narrower term, the fact remains that those skilled in the art would understand the apparatus that the claims refer to.

Further, the image pickup apparatus is recited in the preambles of the rejected claims, what is comprised in the image pickup apparatus is described in more detail in the body of those claims. This further supports the fact that those skilled in the art will understand the image pickup apparatus.

Therefore, such an image pickup apparatus is adequately clear from the present specification and claims to those skilled in the art for them to understand the present invention and practice it without any undue experimentation. Accordingly, Applicants respectfully request that the §112(1) rejection in the subject office action be withdrawn.

⁶ See page 17, lines 14 - 17 of the specification.

⁷ See page 15, lines 5 - 10 of the specification.

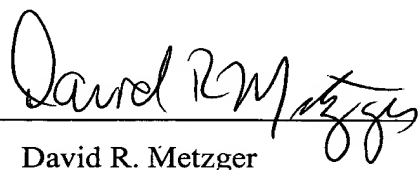
CONCLUSION

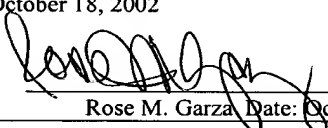
In view of the foregoing, Applicants respectfully submit that pending claims 6 - 8, 10, 13 - 15, 19, 73 - 86, 111 - 113, 115, 118 - 120, 124 and 149 - 162 are patentable over the cited references. Further, all of the Examiner's objections and rejections have been addressed herein. It is, therefore, submitted that the application is in condition for allowance.

Notice to that effect is respectfully requested.

Respectfully submitted,
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APPENDIX A

The following are marked-up versions of the amended claims:

Cancel claims 9, 11, 12, 16, 17, 18, 114, 116, 117, 121, 122 and 123 without prejudice, without admitting anticipation and/or obviousness, and without admitting a non-enabling disclosure therefor.

6. (Once amended.) A light modulation apparatus comprising:

- a liquid crystal device;
- a drive pulse generation unit for driving said liquid crystal device; ~~and~~
- a pulse width control unit for modulating a pulse width of each drive pulse to be applied to said liquid crystal device, thereby controlling a transmittance of light made incident on said liquid crystal device;

a drive circuit unit; and

a control circuit unit,

wherein the modulation of the pulse width of each drive pulse is performed in a manner whereby the waveform of each drive pulse is present in a period of a basic frequency,

each drive pulse whose waveform is present in the period of the basic frequency is generated in synchronization with a clock generated by said drive circuit unit,

and

luminance information of the light emerged from said liquid crystal device is fed back to said control circuit unit, and the pulse width of each drive pulse is modulated in synchronization with a clock generated by said drive circuit unit on the basis of a control signal supplied from said control circuit unit.

111. (Once amended.) A method of driving a light modulation apparatus including a liquid crystal device, comprising the step of:

modulating a pulse width of each drive pulse to be applied to said liquid crystal device, thereby controlling a transmittance of light made incident on said liquid crystal device,

wherein the modulation of the pulse width of each drive pulse is performed in a manner whereby the waveform of each drive pulse is present in a period of a basic frequency,

each drive pulse whose waveform is present in the period of the basic frequency is generated in synchronization with a clock generated by a drive circuit unit provided in said light modulation apparatus, and

luminance information of the light emerged from said liquid crystal device is fed back to a control circuit unit provided in said light modulation apparatus, and the pulse width of each drive pulse is modulated in synchronization with a clock generated by said drive circuit unit on the basis of a control signal supplied from said control circuit unit.

163. (New claim.) A light modulation apparatus comprising:

a liquid crystal device;

a drive pulse generation unit for driving said liquid crystal device;

a pulse width control unit for modulating a pulse width of each drive pulse to be applied to said liquid crystal device, thereby controlling a transmittance of light made incident on said liquid crystal device; and

a polarizing plate disposed in an optical path of light made incident on said liquid crystal device,

wherein said polarizing plate is movable in or from the optical path,
and

said polarizing plate is disposed in a movable portion of a mechanical iris in a manner whereby it is movable in or from the optical path by operation of said movable portion of said mechanical iris.

164. (New claim.) A method of driving a light modulation apparatus including a liquid crystal device, comprising the step of:

modulating a pulse width of each drive pulse to be applied to said liquid crystal device, thereby controlling a transmittance of light made incident on said liquid crystal device,

wherein a polarizing plate is disposed in an optical path of light made incident on said liquid crystal device,

said polarizing plate is movable in or from the optical path, and
said polarizing plate is disposed in a movable portion of a mechanical iris in a manner whereby it is movable in or from the optical path by operation of said movable portion of said mechanical iris.